

the barometric readings have been reduced to normal gravity, and also the value of the adopted corrected term, if the readings have been reduced, or the corrections that should be applied to the tabulated numbers in case they have not been so reduced.

HURRICANES IN JAMAICA, W. I.

In a supplement to his second volume of Jamaica Meteorological Observations, Mr. Maxwell Hall published a list of hurricanes and other phenomena occurring in Jamaica from the earliest dates up to the beginning of his regular work in 1880. Owing to the difficulty of making this complete and correct, he has requested that any additions and corrections may be communicated to him. The following is a list of the dates of hurricanes or severe storms only, omitting the descriptive text which Mr. Hall quotes in full. As his list already corrects errors that had crept into Keith Johnson's Physical Atlas, the reader will miss several hurricanes that are popularly credited to Jamaica:

1689, this hurricane was not very severe; 1712, August 28; 1714, August 29; 1722, August 28; 1726, October 22; 1743, October 20; 1751, September 2; 1772, August 31; 1780, October 3; 1781, August 1; 1784, July 30; 1785, August 27; 1786, October 20; 1812, October 12; 1813, August 28; 1815, October 18-19; 1818, November 18-20; 1832, August 7; 1837, September 26-27; 1874, October 31-November 2; 1880, August 18.

COMMERCIAL IMPORTANCE OF STORM AND WEATHER FORECASTS.

A recent decision of the United States circuit court of appeals (fourth circuit, No. 327), rendered on November 8, 1900, has been quite widely commented on by the daily press and is, indeed, worthy of general notice by the mercantile community. It appears that the first decision of the district court of the United States for the district of South Carolina held a vessel and its owners liable for damages to its cargo owing to their failure to observe the weather forecasts and provide protection against rain. The circuit court of appeals reversed this decision and decided that the failure to observe the *rain forecasts* did not constitute negligence in any of the business relations of life, while at the same time recognizing the fact that the masters of vessels are in duty bound to observe the *storm warnings*. As the whole course of the argument is eminently temperate and fair, we reproduce it in full. The result must serve to stimulate the students of meteorology to hasten the perfection of that science whose study has so recently been taken up in the proper way and whose results must be so important to mankind:

The record shows that the German steamship *St. Georg* arrived in Charleston Harbor on the evening of Thursday, the 21st of July, 1898, having on board as part of her cargo 3,039 bags of rice consigned to the libellant, Wilmot D. Porcher, of the City of Charleston, one-half of which was to go to the customhouse; the other half the consignee intended to deposit at his own store. On Friday, the 22d of July, due notice was given the consignee, Porcher, that the vessel would begin to discharge her cargo at 7 o'clock on the morning of July 23. The bill of lading provided that the goods were "to be delivered subject to the terms and conditions stated in this bill of lading, which constitute the contract between the shippers and the company, in like apparent good order and condition from the ship's deck (where the ship's responsibility shall cease) at the port of Charleston, S. C." "Also to discharge the goods from the steamer as soon as she is ready to unload into hulk, or temporary depot or lighter, or a wharf, at the shipper's or consignee's risk and expense after they leave the ship's deck. The goods to be received by the consignee as fast as the steamer can deliver them, and any extra charges incurred after being discharged, necessary for the steamer's quick dispatch, to be paid by the owner or consignee of the goods." The steamer began to discharge about 7:30 a. m., of July 23. The agent of the consignee was sent to receive and remove the goods and reached the wharf about 8 a. m. Porcher, the consignee, went to the wharf about 10 a. m. Klinck, the agent, had ordered a number of

drays to remove the rice, but only two had reported at the time he arrived, the others not coming until about 11 o'clock. There were present at the unloading, besides the agent and libellant, the agents of several other consignees. The ship was being discharged at an uncovered wharf, which had previously been used for unloading and discharging perishable goods. The rice was at first piled indiscriminately on the wharf, but on complaint being made, after 50 or 60 bags had been landed, the rice belonging to the separate consignees was put into separate piles. The wharf was, to some extent, obstructed by some railroad cars and by some piles of pig iron and resin for outward cargo; the entrance to the wharf was by a narrow gateway; these obstructions impeded the handling of a large number of drays at the same time. There was at the shore end of the wharf a granary, which the agent of the railroad company, the owner of the wharf, told Porcher he could use to protect his rice in the event of rain. A forecast of the weather for Saturday, July 23, was inserted in the News and Courier, a newspaper published in Charleston. It was the custom of the Weather Bureau to distribute these forecasts generally throughout the city and to post them in about fifty places in Charleston. The forecast from the Bureau at Washington for South Carolina was: "On Saturday, showers and thunderstorms; warmer," etc. The local forecast for Charleston and vicinity was: "Light showers, with a probable moderate thunderstorm, followed by fair late in the day," etc. The morning of July 23 was clear until about 11 o'clock, when there came up suddenly a thunderstorm and a heavy fall of rain, lasting over an hour. The precipitation was 1.60 inches. There had been rain on the evenings of the 20th, 21st, and 22d of July, varying in time from 4 p. m. to 10 p. m. The precipitation on the 20th was .15 of an inch. On the 21st less than one-hundredth of an inch, and on 22d .20 of an inch. There were light rainfalls 25th and 26th of July. When the rain began on the 23d, the rice on the wharf was covered with tarpauling, but owing to the heavy downpour they did not afford protection. Some of the rice was damaged before it could be gotten under cover, and some by the water running under the bags on the wharf. Neither the consignee nor his agent, nor the agents of the other consignees, previous to the discharge of cargo nor at the time of the discharge, made any objection to the wharf or to the time or the manner of unloading the rice and placing the same on the wharf.

The district court entered a decree for damages in favor of the libellant. The judge of the court below bases the decree on the negligence of the master in unloading the goods on an uncovered wharf in the face of a threatened storm without making effective preparations for protecting the goods for such time as would afford the consignee fair opportunity for removing the same. This he holds to be culpable carelessness, not justified by any necessity, as covered piers were available. And, further, that it was not proved to his satisfaction that the consignee had fair opportunity to examine the rice, to separate it, and remove it before the rain commenced. The correctness of this decision must be determined by those provisions of the bill of lading which provided for the delivery of the goods. These constitute the contract of delivery, and by this agreement construed in the light of principles pertaining to special contracts of affreightment the parties are bound. It is clear and specific in its terms. It states that the goods are to be delivered in good order and condition from the ship's deck, where the ship's responsibility shall cease, at the port of Charleston.

Also, that the steamer is "to discharge the goods as soon as she is ready to unload into hulk * * * or on a wharf at shipper's or consignee's risk and expense after they leave the ship's deck."

Under this contract, the liability of the ship for the safety and security of the goods ceased when the goods were landed on the wharf, the consignee being present and accepting the goods as delivered from the ship's tackle. In the absence of the consignee without notice, where there is a general bill of lading, it is the duty of the master to land the goods at a suitable wharf at a proper time and give the consignee reasonable time after notice to remove the goods. But this doctrine is not applicable to the case at bar, though this is the view urged by the counsel for libellant, and is the view taken by the court below. We must determine this case on the principles applying where the consignee has had due notice, is present in person or by his agent during the delivery, and is engaged in receiving the goods. There is no usage shown as to the delivery of goods at the port of Charleston to change the general rule as to the responsibility of the carrier.

The reason of the difference in the degree of liability of the carrier for the safety of the goods, after their landing from the ship, where the consignee is present, receiving them, and where he is absent at the time of discharge, is that in the former case he has an opportunity, if the goods are not being delivered at a proper place and time and in a proper manner, to object to the delivery. In the latter case he has not that opportunity, and the general maritime usage extends the responsibility of the carrier, as to the protection of the property, after it passes from the ship's deck to the wharf. Contracts of affreightment, in effect the same as that made in this case, have been construed in a number of decisions. The *Santee*, 7 Blatchford, 186, Fed. Cases No. 12330, is a case frequently cited in admiralty decisions, and quoted by text writers on the law of carriers. The law as expressed in that decision is thus stated in Hutchinson on Carriers, 2d Edition, 430, note; The *Santee*, Fed. Cases, No. 12330. 5 Myer's Federal Decisions, 407;

"Where the stipulations of the bill of lading require the consignee to be present and receive the goods as soon as the vessel is ready to unload, and that they shall be at the consignee's risk as soon as landed on the dock, and the consignee is duly notified, and attends in order to accept the goods as landed, and takes more or less charge of them, the stipulation is held to exempt the ship from subsequent loss or damage." In such cases as the consignee has due notice of discharge and accepts the goods, the duty of protecting the property is cast upon him and the ship is released. *The Surry*, 26 Fed., 791.

In *Willis and others v. the steamship City of Austin*, 2 Fed., 412, it was provided in the bill of lading: "It is expressly understood that the articles named in this bill of lading shall be at the risk of the owner, shipper, or consignee thereof, as soon as delivered from the tackles of the steamer at her port of destination," and that if the goods were not taken away the same day by the consignee, they might, at the option of the steamer's agents, be sent to store, etc., at the expense and risk of the owner, shipper, or consignee. A case of merchandise had been delivered on the wharf, and was taken away by the draymen of a party to whom it was directed, though not the one for whom it was intended.

The steamer was held not liable for the loss, Choate, J., constructing the bill of lading, saying: "I think, therefore, the case is governed by the case of the *Santee*, and that the ship is not responsible, because the goods in question were delivered within the meaning of the bill of lading, and the consignees had full notice to attend, and did in fact attend, upon the discharge of the vessel to receive their goods. Libel dismissed, with costs."

In the case of the *Tybee*, 1 Woods, 358, Fed. Cases No. 14304, 5 Myer's Federal Decisions, 362, the bill of lading contained this agreement: "It is expressly understood that the articles named in this bill of lading shall be at the risk of the owner, shipper, or consignee thereof, as soon as delivered from the tackles of the steamer at her port of destination, and they shall be received by the consignee thereof, package by package, as so delivered."

Justice Bradley, construing this contract, says: "The carrier's liability ceases, of course, when he has delivered the goods according to the bill of lading. The general rule with regard to delivery, as laid down in the books, is that, in the absence of a special contract, the goods are to be regarded as delivered, so far as the carrier's responsibility is concerned, when they are deposited on the proper wharf at their place of destination, at a proper time, and notice has been given to the consignee."

Applying the doctrine established by these authorities to the case before us, the facts fail to sustain the charge of negligence on the part of the master. Negligence rests upon a breach of duty, and the record in this case does not show wherein the master failed in the discharge of his duty under the contract embodied in the bill of lading. No question is raised as to his compliance with this agreement to the time the rice was landed on the wharf. The substantial complaint is that the goods were delivered on the wharf more rapidly than they could be removed by the consignee, and that, by reason of this rapid delivery and a failure to properly separate the goods, the removal of the rice was delayed, in consequence of which it was injured by the rain. The evidence shows that the consignee had ample notice of the time and place at which the steamer would begin to unload. It further shows that he made inadequate preparations for the removal of the goods. At 8 o'clock a. m. he had but two drays at the wharf, and that they had removed 40 bags of rice before the rain; that the consignee had ordered a number of additional drays, but these failed to appear until too late to remove the rice before it was injured. The consignee was told by the agent of the railroad company, at the wharf of which the vessel was unloading, that he could use the granary at the shore end of the wharf to store his rice for protection in the event of rain. Of this shelter he made no effort to take advantage. The evidence does not show that the unloading on the wharf was unusually rapid and such that the master should have known that the consignee could not take proper care of the goods after delivery from the ship's deck. If the consignee, who knew his resources for removing the goods, believed they were being landed so rapidly as to delay him in their removal and in taking proper care of them, it was manifestly his duty to inform the master of that fact, in order that the goods might be discharged in a manner not to embarrass the consignee in their removal.

As to the mutual duties of the consignee and the master, Justice Clifford said in *Salmon Falls Manufacturing Company v. The Bark Tangier*, 1 Clifford, 396, 5 Myer's Federal Decisions, 385, Fed. Cases No. 13743: "Consignees and masters of vessels are expected to cooperate in the delivery of consignments; and if they do so, it will seldom happen that any controversy will arise; and, when they do not do so, the delinquent party must abide the consequences." The master can not be presumed to know the facilities of the consignee for removing his goods. That is a matter over which he has no control, nor does the law make it his concern. He could not order one dray more or less, nor in anywise control the removal of the goods from the wharf to the store of the consignee. The *Santee*, 5 Myer's Federal Decisions, page 410. For him to have undertaken to interfere in any way in the transportation of the goods from the wharf would have been to go beyond the obligations of the contract which fixed his responsibility as a carrier, and an unwarranted interference in a matter that was entirely

under the control of the consignee, and with which he alone was concerned. The consignee knew his resources for removing his goods. The same observation may be made on the failure of the consignee to object to the goods being landed on an open wharf, or to the time of the landing or the conditions of the weather. Had the master persisted, after objections by the consignee, in landing the goods in such way as to likely result in their damage, the ship might have been held liable therefor. *The Grafton*, 1 Blatchford, 173; Fed. Cases No. 5655, 5 Myer's Federal Decisions, 365.

The consignee being present, acquiescing in the time, the place, and method of discharge, receiving the goods according to the special contract of lading, he thereby accepted them, and the master was relieved of further responsibility for their preservation. They had passed from the custody of the master by actual, not constructive, delivery, to the custody and control of the consignee. They were in his custody when damaged, and the loss can not be thrown on the ship.

As to the finding of the district court that the master was negligent in landing the rice in the face of a threatened storm, we have stated the evidence on which the district court rested this conclusion. It consists of the facts that on each of the preceding days there had been light showers; that of the 21st being less than one-hundredth of an inch, "a mere trace;" the prediction of the Weather Bureau, published in a Charleston newspaper and posted at about fifty places in the city on the morning the ship began to unload. We are not prepared to give these predictions of the Weather Bureau the character of established facts, the failure to observe which shall constitute negligence in any of the business relations of life. The science of forecasting the weather has not reached the degree of exactness which will justify the court in saying that men in their every day avocations, whether sea-faring men or others, are bound to take notice of and be guided by its local forecasts, and that it is negligence not to observe them. The case is different where storms of great violence and extent, such as frequently occur on our Atlantic coast, and where information of their existence, course, and the probable time at which they will reach designated points, is given by telegraphic communication and by storm signals, which, if brought to the notice of the master, or of which it is his duty to take cognizance, these he would be bound to observe.

It may be questioned if there is anything of which the general public is expected to take cognizance that is less reliable than are the daily weather forecasts to which it is accustomed, and which are brought to its attention by newspaper notices and printed circulars. Were we disposed to give the weather forecasts the weight allowed them by the district judge, there is no evidence that they were brought to the notice of the master. Further, if the master was bound to take notice of the weather predictions, he should only be held liable for not providing against the light showers predicted, against which, as the record shows, the tarpaulins would have afforded sufficient protection for the rice, and not be required to provide against such an unexpected and heavy downpour of rain as that which did the damage, and was not predicted by the local weather notices. Again, the consignee had equal opportunity, at the least, with the master to anticipate the storm, the latter being unacquainted with the English language, the record showing that his deposition in this case was taken through an interpreter.

In our view, the district court should have dismissed the libel, and it is ordered that the same be dismissed, with the costs of this and the district court for the appellant.

THE EVOLUTION OF THE THERMOMETER.

Under the above title the Chemical Publishing Company of Easton, Pa., has just published a small volume by Dr. Henry Carrington Bolton of Washington, Pa., summarizing the results of his personal researches into the history of the development of the modern mercurial thermometer. Since the publication of the Editor's Meteorological Apparatus and Methods, in 1887, two well known German authorities, Dr. E. Gerland and Dr. H. Hellmann, have contributed to our knowledge of the early history of the thermometer. The latter, in his reprints of classic scientific literature, and the former in his history of the art of experimentation in physics, Leipsic, 1899. According to both these authors, as well as the present more extended publication by Bolton, the thermometer, as distinct from the thermoscope, was not invented either by Drebbel, about 1608, nor by Porta, 1558, nor by Bianconi, 1617, nor by Leurechon, 1624, but really and truly by Galileo Galilei before he accepted the professorship at Padua, in 1592. Galileo's first instrument seems to have been a crude air thermometer, and probably in this form was used by his pupil Sagredo, whose letters of 1613 and 1615 give many details. Galileo himself speaks of the degrees or